Influence of AMS on Drift Reduction Antagonisms.

02-52-M70

OBJECTIVE: Determine if the addition of AMS has any influence on the antagonism observed on waterhemp when glyphosate is applied with a drift reduction nozzle and agent.

SUMMARY: In studies conducted in 2001 to determine the effect of drift control agents and nozzles on weed control with glyphosate, waterhemp control was sometimes antagonized when glyphosate was applied with a drift reducing nozzle, a drift reducing agent, or a combination of both. The purpose of this study was to determine if adding AMS to glyphosate could overcome that antagonism. All treatments were applied with Turbo Teejet nozzles. No soybean injury was observed in this study and all treatments provided complete control of giant foxtail by 14 DAT (days after treatment). Waterhemp control 14 DAT was reduced 6 to 7% when 30% polyacrylamide (PA), Placement, or Lox was added to Roundup UltraMax compared to Roundup UltraMax alone. However, this antagonism was overcome with the addition of AMS at either 1 or 2% w/w to each of these treatments. Waterhemp control was more variable at 28 DAT, but waterhemp control was improved with the addition of 2% w/w AMS to Roundup UltraMax plus 30% PA and the addition of 1% w/w AMS to Roundup UltraMax plus Lox. Drift reducing agents did not reduce fall panicum control at 14 DAT. Soybean yield was 28 bu/A in plots treated with Roundup UltraMax alone. Soybean yield was increased to 33 bu/A in plots where Roundup UltraMax was applied with AMS at 1% w/w. All other herbicide treated plots yielded similar to Roundup UltraMax alone.

HERBICIDES/ADJUVANTS	WEEDS	CROP
ROUNDUP ULTRA MAX 3.7 SL	foxtail, giant	soybean
30% PA 100 LIQ	grasses, annual	
AMS 100 DRY	panicum, fall	
HPG 77.5 WG	waterhemp, common	
LOX 100 LIQ		
PLACEMENT 100 LIQ		

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PLANT, SOIL AND GENERAL AGRICULTURE DEPARTMENT

SOUTHERN ILLINOIS UNIVERSITY

Influence of AMS on Drift Reduction Antagonisms.

Project Code: 02-52-M70 Location: Belleville Research Center

Investigator: Bryan Young, Assistant Professor, Southern Illinois University

City State Zip Country: Belleville IL 62221 USA
Trial Status: Final **Updated:** 10-29-02

Objective:
Determine if the addition of AMS has any influence on the antagonism observed on waterhemp when glyphosate is applied with a drift reduction nozzle and agent.

	Weed Code	Common Name	Scientific Name
1.	SETFA	foxtail, giant	Setaria faberi Herrm.
2.	AMATA	waterhemp, common	Amaranthus rudis Sauer
3.	PANDI	panicum, fall	Panicum dichotomiflorum Michx.
4.	GGGAN	grasses, annual	

Crop 1: GLXMA soybean **Variety:** Asgrow 4602 RR
Planting Method: Seeded **Planting Date:** 6-4-02
Rate: 75 lb/A **Depth:** 1.0 IN
Row Spacing: 30 IN

Plot Width, Unit: 10 FT **Plot Length, Unit:** 25 FT **Reps:** 4
Tillage Type: Reduced-Till **Study Design:** Randomized complete block
Previous Crop, Year: GLXMA, 2001

Field Prep./Maintenance: N 0 LB/A, P2O5 50 LB/A, K2O 150 LB/A

Soil Name: Weir **% OM:** 1.9 **pH:** 7.1 **CEC:** 12
Texture: Silt loam **Fert. Level:** P1: 97 LB/A, K: 282 LB/A

APPLICATION DESCRIPTION

	A
Application Date:	7-4-02
Time of Day:	10:00
Application Method:	Spray
Application Timing:	6-8"W
Applic. Placement:	BROFOL
Air Temp., Unit:	92 F
% Relative Humidity:	50
Wind Velocity, Unit:	3 MPH
Soil Moisture:	BELNOR
% Cloud Cover:	0

CROP STAGE AT EACH APPLICATION

	A
Crop 1 Code, Stage:	GLXMA V2-V3
Height, Unit:	6-8 IN

WEED STAGE AT EACH APPLICATION

	A
Weed 1 Code:	SETFA
Stage(leaves):	3-5
Height(inches):	4-8
Density:	High
Weed 2 Code:	AMATA
Stage(leaves):	2-12
Height(inches):	1-8
Density:	High
Weed 3 Code:	PANDI
Stage(leaves):	3-5
Height(inches):	4-8
Density:	Low

APPLICATION EQUIPMENT

	A
Appl. Equipment:	CO2 sprayer
Operating Pressure:	40 PSI
Nozzle Type:	Flat fan
Nozzle Size:	TT 110015
Boom Length, Unit:	7.5 FT
Spray Volume, Unit:	10 GPA

NOTES:

Harvested Oct-23-02, (2) 30 inch rows by 22 ft.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	GLXMA Yield	GLXMA Injury	GLXMA Injury	SETFA Control	SETFA Control	AMATA Control	AMATA Control	PANDI Control	PANDI Control	GGGAN Plants	AMATA Plants
	Weed Code																			
	Crop Code									GLXMA	GLXMA	GLXMA								
	Rating Data Type									Yield	Injury	Injury	Control	Control	Control	Control	Control	Control	Plants	Plants
	Rating Unit									bu/A	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	1.0 m2	1.0 m2
	Rating Date									10-23-02	7-18-02	8-1-02	7-18-02	8-1-02	7-18-02	8-1-02	7-18-02	8-1-02	7-25-02	7-25-02
	Trt-Eval Interval										14 DA-A	28 DA-A	14 DA-A	28 DA-A	14 DA-A	28 DA-A	14 DA-A	28 DA-A	21 DA-A	21 DA-A
1	NONTREATED									16	0	0	0	0	0	0	0	0	367	297
2	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A	28	0	0	99	98	31	43	58	33	137	119
3	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A	27	0	0	99	98	25	21	54	30	159	141
3	30% PA	100	LIQ	4.0	OZ/100 GAL	4	OZ/100 GAL	6-8"W	A											
4	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A	28	0	0	99	98	28	30	56	39	115	98
4	HPG	77.5	WG	8.0	OZ A/100 GAL	10.3	OZ/100 GAL	6-8"W	A											
5	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A	27	0	0	99	98	24	46	54	40	158	80
5	PLACEMENT	100	LIQ	6.5	OZ/A	6.5	OZ/A	6-8"W	A											
6	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A	26	0	0	99	98	24	29	55	33	131	103
6	LOX	100	LIQ	6.0	OZ/A	6	OZ/A	6-8"W	A											
7	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A	33	0	0	99	98	31	26	60	43	95	89
7	AMS	100	DRY	1.0	% W/W	1	%W/W	6-8"W	A											
8	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A	28	0	0	99	98	28	23	58	28	103	127
8	30% PA	100	LIQ	4.0	OZ/100 GAL	4	OZ/100 GAL	6-8"W	A											
8	AMS	100	DRY	1.0	% W/W	1	%W/W	6-8"W	A											
9	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A	30	0	0	99	98	33	36	63	43	76	68
9	HPG	77.5	WG	8.0	OZ A/100 GAL	10.3	OZ/100 GAL	6-8"W	A											
9	AMS	100	DRY	1.0	% W/W	1	%W/W	6-8"W	A											
10	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A	29	0	0	99	98	31	40	60	49	83	81
10	PLACEMENT	100	LIQ	6.5	OZ/A	6.5	OZ/A	6-8"W	A											
10	AMS	100	DRY	1.0	% W/W	1	%W/W	6-8"W	A											
11	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A	28	0	0	99	98	31	38	63	41	89	67
11	LOX	100	LIQ	6.0	OZ/A	6	OZ/A	6-8"W	A											
11	AMS	100	DRY	1.0	% W/W	1	%W/W	6-8"W	A											
12	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A	31	0	0	99	98	33	31	61	41	91	95
12	AMS	100	DRY	2.0	% W/W	2	%W/W	6-8"W	A											
13	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A	31	0	0	99	98	35	36	68	43	86	93
13	30% PA	100	LIQ	4.0	OZ/100 GAL	4	OZ/100 GAL	6-8"W	A											
13	AMS	100	DRY	2.0	% W/W	2	%W/W	6-8"W	A											

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	Weed Code												SETFA	SETFA	AMATA	AMATA	PANDI	PANDI	GGGAN	AMATA
	Crop Code									GLXMA	GLXMA	GLXMA								
	Rating Data Type									Yield	Injury	Injury	Control	Control	Control	Control	Control	Control	Plants	Plants
	Rating Unit									bu/A	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	1.0 m2	1.0 m2
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	Trt-Eval Interval										14 DA-A	28 DA-A	14 DA-A	28 DA-A	14 DA-A	28 DA-A	14 DA-A	28 DA-A	21 DA-A	21 DA-A
14	ROUNDUP ULTRA MAX	3.7	SL	0.188	LB AE/A	6.5	OZ/A	6-8"W	A	29	0	0	99	98	33	28	66	44	71	60
14	HPG	77.5	WG	8.0	OZ A/100 GAL	10.3	OZ/100 GAL	6-8"W	A											
14	AMS	100	DRY	2.0	% W/W	2	%W/W	6-8"W	A											
LSD (P=.05)										5.0	0.0	0.0	0.0	0.0	5.8	8.0	4.9	7.8	57.5	38.2
Replicate F										3.994	0.000	0.000	0.000	0.000	1.791	0.464	1.652	6.720	10.934	3.656
Replicate Prob(F)										0.0142	1.0000	1.0000	1.0000	1.0000	0.1649	0.7087	0.1932	0.0009	0.0001	0.0205
Treatment F										4.781	0.000	0.000	0.000	0.000	18.107	16.570	91.918	19.383	13.990	19.467
Treatment Prob(F)										0.0001	1.0000	1.0000	1.0000	1.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

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Trial Comments

1. Protocol: SIU (BGY).
2. DA-A = days after 6-8"W application. 1.0 m2 = 1.0 square meter. GGGAN = grasses, annual including SETFA and PANDI.